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INSTRUMENTATION RESEARCH

SEPTEMBER 1961

Develop nondestructive, objective measures of quality -- that's the assignment of a group of Agricultural Marketing Service scientists. And they do this through instrumentation research. Pictured below and on the following pages are some of the machines that are taking the human element out of quality measurement and, at the same time, measuring quality without destroying the sample.



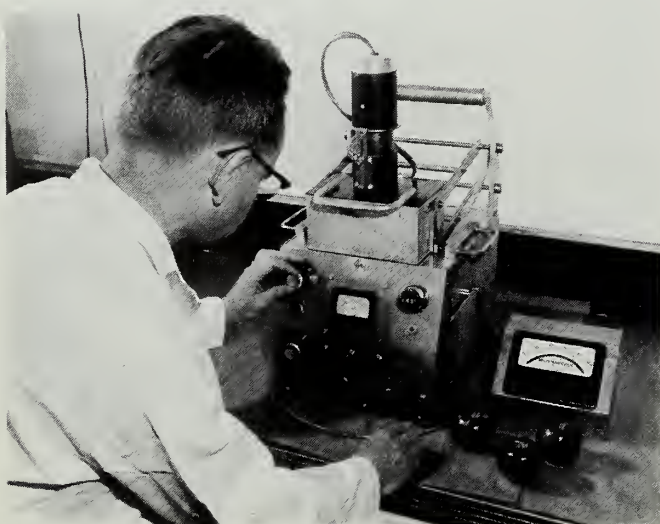
N-41260--Karl Norris, AMS marketing researcher, makes an adjustment on a quality measuring machine so new that it hasn't been named. This device will check for quality defects in a variety of products from peanuts to potatoes.

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N-41254--Karl Norris places a potato in the difference meter. By passing two light frequencies through the sample the scientists can tell if the potato has hollow heart.

N-41255--The difference meter can also detect the amount of mold damage in corn...



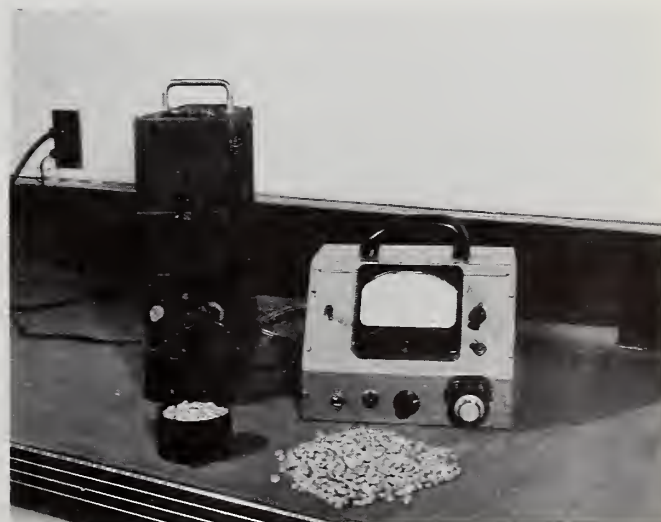
N-41253--...and water core in apples.

N-41258--The hortispect is also used to judge maturity in apples. It was built before the difference meter and is the first generation of this type of instrument.



N-41256--Color is an important measure of tomato juice quality. The tomato colorimeter, developed by AMS scientists, judges the color of the juice. This device is now in use in tomato processing plants.

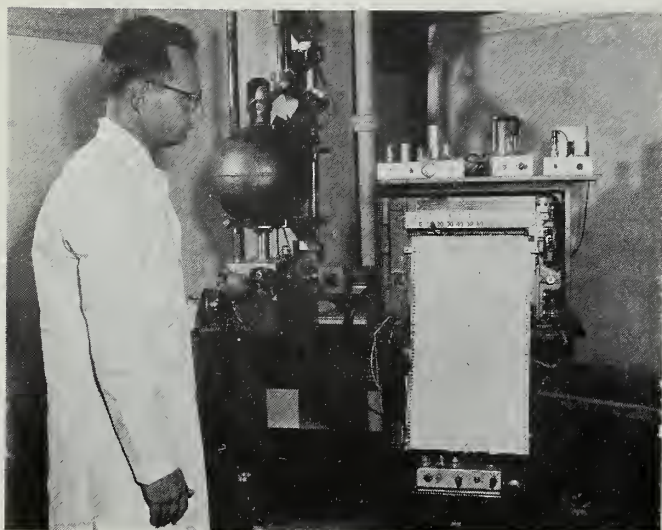
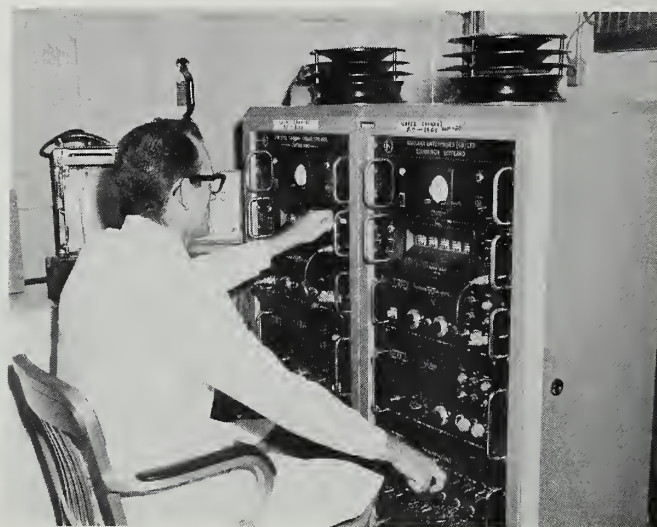
N-41257--The smut meter. This device will measure the smut content of wheat or mold damage in corn. The sample is placed in the black box.





N-41238--A beef round goes into the radiation counter. By counting the amount of minute radiation--present in all living things--scientists can measure the amount of fat in the meat.

N-41235--The other half of the radiation counter. Michael Combs, AMS researcher, reads the amount of radiation given off by the beef (above). Pork, poultry, and lamb, as well as beef, are "read" in the counter. The machine does not harm the sample, but allows it to continue in the channels of trade.



N-41265--The rephobiospect is used to judge the maturity of apples. The apple is placed under the sphere (left). A curve is made on the chart (right). By testing thousands of apples in various stages of maturity, the scientists have identified the curve that represents a rich, ripe, mature apple.

